

The association of various risk factor and plantar pressures in the development of peripheral neuropathy amongst diabetic patients attending outpatient clinics.

ABSTRACT

Background: Peripheral neuropathy is associated with foot complications among diabetics. This study aimed to identify risk factors associated with peripheral neuropathy and its association with the difference in plantar pressures in degree of severity of peripheral neuropathy. Methods and Material: Cross sectional study conducted in outpatient clinics at the University Kebangsaan Malaysia Medical Centre (UKMMC), Malaysia. Diabetics aged 18-70 years were recruited. Exclusion criteria were those with amputated limb, gross foot deformity and existing peripheral neuropathy. Controls were non-diabetics who walk normally, no history of foot problem and attended the clinic as subjects' companion. Quantitative assessments for neuropathy Semmes-Weinstein monofilament and Neuropathy Disability Score (NDS). F-scan system was used to analyze the plantar pressures. Spearman's Rank test, Mann-Whitney test used to determine correlation between variables and logistic regression analysis used to determine risk factors associated with peripheral neuropathy. P value < 0.05 was considered significant. Results: 91 subjects were recruited (72 diabetics; 19 non diabetic volunteers). Presence of callus was associated with higher NDS scores. Older age (P = 0.02), heavy weight (P = 0.03), HbA1c (P = 0.005) and duration of diabetes (P < 0.005) showed positive correlation with NDS. Forefoot to rearfoot (F/R) ratio of maximal plantar pressure in both feet showed no significant difference to callus or ulcers (p = 0.195) and degree of severity (p = 0.598). Conclusion: Age and weight were associated risk factors for diabetic peripheral neuropathy. Plantar pressure is not a valuable tool for predicting foot ulceration among diabetes patients.

Keyword: Diabetes Mellitus type 2; Paripheral neuropathy; Neuropathy Disability Score (NDS); Semmes Weinstein Monofilament (SWMF); Plantar pressure.